Marin Environmental, Inc.

Environmental Consultants and Engineers

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97-2308

22 January 1998

Mr. Chuck Schwer
Department of Environmental Conservation
Waste Management Division
103 South Main Street, West Building
Waterbury, Vermont 05671-0404

RE: Expressway Initial Site Investigation Report
Maple Grove Farms of Vermont, Inc., St. Johnsbury, VT

Dear Chuck,

Enclosed is one bound copy of the Initial Site Investigation Report for Maple Grove Farms of Vermont, Inc. St. Johnsbury, VT, which was completed under the Expressway notification process.

Please call me if you have any questions or comments regarding this report.

Sincerely,

Ron Miller
Hydrogeologist and Regional Manager

enclosure

cc. Mr. Rick Lebrun, Maple Grove Farms of Vermont

Ref: 97111C02.DOC

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INITIAL SITE INVESTIGATION REPORT

MAPLE GROVE FARMS OF VERMONT, INC.
167 Portland Street
St. Johnsbury, VT 05819

23 January, 1998

Prepared for:

MAPLE GROVE FARMS OF VERMONT, INC.
167 Portland Street
St. Johnsbury, VT 05819

Contact: Mr. Rick Lebrun
Phone: 802-748-9647

Prepared by:

Marin Environmental, Inc.
1700 Hegeman Avenue
Colchester, VT 05446

Contact: Brent Deshaies
Phone: 802-655-0011

MARIN Project #: V97-111
MARIN Document #: 97111R01.DOC

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Marin Environmental, Inc. (MARIN) has conducted an initial site investigation at Maple Grove Farms of Vermont, Inc. located on 167 Portland Street, St. Johnsbury, VT and has concluded the following:

- Petroleum released from apparent overfilling of the former underground storage tank (UST) system at the site appears to have resulted in a minor impact to ground water in the vicinity of the former UST system. Analytical results of ground-water samples collected from four on-site monitoring wells did not detect the presence of petroleum compounds above the Vermont Groundwater Enforcement Standards (VGESs).
- Observations made during the UST closure and ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that residual contamination is limited to the immediate vicinity of the former UST.
- The residual subsurface contamination at the site does not appear to pose a threat to any nearby sensitive receptors. Drinking-water for the site and adjacent properties is supplied by a municipal system. The nearby Moose River does not appear to be at risk at this time from the residual contamination. None of the on-site buildings have basements.
- Surficial materials at the site consist mainly of medium to fine sand and gravel. On 2 December 1997, the water table was found to range from about 1.28 to 2.96 feet below ground surface, and exhibited a southerly trending gradient of about 6.25 percent.

On the basis of the results of this investigation, MARIN makes the following recommendations:

1. The four on-site monitoring wells should be resampled to confirm the December 1997 analytical results. The samples should be analyzed for petroleum-related compounds by EPA Method 8020 and for Polycyclic Aromatic Hydrocarbons by EPA Method 8100.
2. If the subsequent ground-water analytical results confirm the findings of the December 1997 analytical data (no exceedance of VGESs), MARIN recommends that the site be considered for "Site Management Activities Completed" (SMAC) status by the Vermont Department of Environmental Conservation (VT DEC).

1.0 INTRODUCTION

This report details the results of an initial site investigation conducted at Maple Grove Farms of Vermont, Inc., located on Portland Street in the town of St. Johnsbury, Vermont (Figure 1). This report has been prepared by Marin Environmental, Inc. (MARIN) under the direction of Mr. Rick Lebrun of Maple Grove Farms of Vermont, Inc. The site investigation was initiated with Vermont Department of Environmental Conservation (VT DEC) approval following the discovery of subsurface petroleum contamination during the removal of one underground storage tank (UST) on 3 November 1997.

1.1 Site Location and Physical Setting

The site is located at 167 Portland Street (U.S. Route 2) in the town of St. Johnsbury, Vermont (Figure 1). The maple syrup and candy processing facility consists of a two-story brick building with an overhead walkway to a large industrial warehouse.

The on-site two story brick building is located approximately 15 feet from the southern edge of Portland Street in a commercial section of the town. The associated industrial warehouse is located approximately 75 feet south of the on-site brick building. Running east-west between these two buildings lie train tracks operated by Lamoille Valley Railroad. Approximately 60 feet south of the industrial warehouse the land surface drops sharply approximately 30 feet to the Moose River. The ground surface around the on-site structures has an average elevation of about 630 feet above mean sea level and generally slopes south. The presumed direction of ground-water flow in the area is south, toward the Moose River.

1.2 Site History

On 3 November 1997, MARIN supervised the removal of one underground storage tank (UST) located on the property. The removed UST was a 10,000-gallon in-service, single-walled-steel # 2 heating oil UST, reportedly installed in 1985, located adjacent to the southwest corner of the two story brick building. The diesel tank had been constructed on crushed stone. The UST was found to be in good condition upon removal with some surface rust and minor pitting. No holes were observed along the tank surface. Associated fill and vent-line piping for the UST was in good condition, with some surface rust and minor pitting but no apparent holes. The copper suction and return lines, which were encapsulated with larger plastic piping, were found to be in excellent condition.

Soils in the UST excavation consisted of loamy medium-to-fine sand to the bottom of excavation at 7.5 feet below ground surface (bgs). Soils in the area surrounding fill pipe exhibited dark black staining and a strong petroleum odor. Deeper soils (depths of 4-6 feet bgs) exhibited a petroleum odor with minor staining.

Ground water was observed in the UST excavation at a depth of about 7.5 feet bgs. A heavy petroleum sheen was observed on the water in the excavation.

Soils in the vicinity of the UST were screened for the possible presence of volatile organic compounds (VOCs) with a ThermoEnvironmental Model 580B portable photoionization detector (PID). The PID was calibrated on the day of the UST closure assessment with isobutylene gas to a benzene reference. Soil samples were placed in Ziploc bags, which were then sealed and agitated. Bag headspace was then screened for the presence of VOCs with the PID.

PID readings on soil samples collected from the UST excavation ranged from 0.0 to 124.5 parts per million (ppm), with the highest concentrations noted at the top of the tank in the vicinity of the fill pipe at a depth of 2-3 feet bgs. PID readings in the UST excavation averaged 22.5 ppm.

Due to the site limitation of an appropriate area for stockpiling and the apparent impact on ground-water, all excavated soils were backfilled.

MARIN initiated an initial site investigation under the VT DEC "Expressway" process after receiving approval on 6 November 1997 from Mr. Rick Lebrun of Maple Grove Farms of Vermont, Inc. and the VT DEC.

1.3 Objectives and Scope of Work

The objectives of this initial site investigation were to:

- Evaluate the degree and extent of petroleum contamination in soil and ground-water;
- Qualitatively assess the risks to environmental and public health via relevant sensitive receptors and potential contaminant migration pathways; and
- Identify potentially appropriate monitoring and/or remedial actions based on the site conditions.

To accomplish these purposes, MARIN has:

- Supervised the installation of four soil borings/monitoring wells, and determined the local ground-water flow direction.
- Screened subsurface soils from the soil borings for the possible presence of volatile organic compounds (VOCs) using a photoionization detector (PID).
- Identified sensitive receptors in the area, and assessed the risk posed by the contamination to these potential receptors.
- Evaluated the need for treatment and/or a long-term monitoring plan for the site.
- Prepared this summary report, which details the work performed, qualitatively assesses risks, provides conclusions and offers recommendations for further action.

2.0 INVESTIGATIVE PROCEDURES AND RESULTS

2.1 Soil Boring / Monitoring Well Installation

On 18 November 1997, a MARIN field scientist supervised the completion of four soil borings/monitoring wells (MW-1, MW-2, MW-3 and MW-4). Approximate monitoring well locations are shown on Figure 2. The soil borings were installed using vibratory and auger drilling technique by Adams Engineering of Underhill, Vermont. All of the monitoring wells were developed after installation using a peristaltic pump. Monitoring-well construction details are included on the soil-boring and well-construction logs in Appendix A.

The soils encountered in each boring generally consisted of medium to fine sand and gravel. Borings were completed to depths ranging from 3-12 feet below ground surface (bgs). Ground water was encountered between 1.5 and 5 feet bgs at the time of drilling. Soil samples were collected continuously from each boring using a five-foot long core tube lined with polyethylene or collected at appropriate intervals off the auger. Soil recovery was generally poor, ranging between zero and 60 percent. The soil samples were screened for the possible presence of VOCs with a photoionization detector (PID) and logged for lithology by the MARIN field scientist. All downhole drilling and sampling equipment was decontaminated during use as appropriate. Each completed monitoring well was protected by a flush-mounted steel roadbox cemented into place. Each well casing was topped with a water-tight compression cap.

2.2 Soil-Screening Results

Soil samples collected from each boring were screened with a ThermoEnvironmental Model 580B portable photoionization detector (PID) for volatile organic compounds (VOCs). The PID was calibrated on the day of the well installations with isobutylene gas to a benzene reference. Readings ranged from 0.0 to 60.2 ppm in samples collected from MW-2, located in the former UST pit. PID readings ranged from 0.0 to 2.8 in downgradient wells MW-3 and MW-4. No readings above background were detected in the upgradient well (MW-1). PID screening results are included on the boring logs in Appendix A.

2.3 Determination of Ground-Water Flow Direction and Gradient

Ground water in the unconfined surficial aquifer directly beneath the site appears to be flowing in a southerly direction, toward the Moose River. The average gradient of the local ground-water table on 2 December 1997 was about 6.25 percent. Water-level measurements and elevation calculations for 2 December 1997 are presented in Table 1. The ground-water contour map in Figure 3 was prepared using this data.

TABLE 1. Ground-Water Elevation Data

Well I. D.	Top of Casing Elevation *	Depth to Water (feet, TOC)	Ground Water Elevation
MW-1	100	2.96	97.04
MW-2	99.56	2.47	97.09
MW-3	95.99	2.20	93.79
MW-4	96.23	1.28	94.95

*Top of casing (TOC) and ground water elevations are relative to an arbitrary site datum of 100.00 feet

Fluid levels were measured in the four monitoring wells on 2 December 1997. The depth to water varied from 1.28 feet (MW-4) to 2.96 feet (MW-1) below top-of-casing. No free-phase petroleum was observed in any of the on-site monitoring wells. Static water-table elevations were computed for each monitoring well by subtracting the measured depth-to-water readings from the surveyed top-of-casing elevations, which are relative to an arbitrary site datum of 100.00 feet.

The shallow aquifer at the site consists mainly of medium to coarse sand and gravel, with occasional medium-to-fine silty sands. These soils typically exhibit effective porosities of about 0.31 to 0.46 and hydraulic conductivities of about .25 to 140 ft/day (Fetter, 1994). Assuming Darcian flow, these estimated ranges of porosity and conductivity combine with the calculated ground-water gradient of 6.25 percent to yield an estimated range of ground-water flow velocities in the surficial aquifer of between .05 and 29 ft/day.

2.4 Ground-Water Sampling and Analysis

The Vermont Groundwater Enforcement Standards (VGESs) for benzene, toluene, ethylbenzene, xylenes (collectively referred to as BTEX) were not exceeded in any of the ground-water samples collected on-site. The sample collected from MW-2 contained small quantities of xylenes, toluene, and ethylbenzene at 12.5, 1.1, and 1.7 ppb (parts per billion) respectively. Total petroleum hydrocarbons (TPH) were detected in MW-2 and the MW-2 duplicate sample at 1.57 and 1.49 ppm (parts per million) respectively. Ground-water analytical results are summarized below in Table 2; the contaminant distribution is shown on Figure 4. Laboratory report forms are included in Appendix B.

TABLE 2. Ground-Water Analytical Results
December 1997

Well I.D.	Benzene	Ethyl benzene	Toluene	Xylenes	MTBE	TPH
MW-1	ND <1	ND <1	ND <1	ND <1	ND <1	ND
MW-2	ND <1	1.7	1.1	12.5	ND <1	1.57 ppm
MW-3	ND <1	ND <1	ND <1	ND <1	ND <1	ND
MW-4	ND <1	ND <1	ND <1	ND <1	ND <1	ND
Duplicate (MW-1)	ND <1	1.8	1.5	17.3	ND <1	1.49 ppm
Trip Blank	ND <1	ND <1	ND <1	ND <1	ND <1	–
VGES*	**5**	**700**	**1,000**	**10,000**	**40**	--

Results reported as parts per billion (ppb), unless noted otherwise.
ND = Compound not detected above indicated detection limit.
VGES = Vermont Groundwater Enforcement Standard, * Vermont Health Advisory for MTBE.

Ground-water samples were collected from four monitoring wells on 2 December 1997. Each monitoring well was purged and then sampled using the dedicated bailer and dropline. Purge water was discharged directly to the ground in the vicinity of each well. A trip blank and a duplicate sample were collected during the December sampling events for quality assurance/quality control (QA/QC) purposes. All field procedures were conducted in accordance with MARIN standard protocols.

The ground-water samples were submitted to Endyne, Inc. of Williston, Vermont, where they were analyzed for the possible presence of benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tertiary butyl ether (MTBE) by EPA Method 8020 and total petroleum hydrocarbons (TPH) by modified EPA Method 8100. Analytical results from the QA/QC samples indicate that adequate QA/QC was maintained during sample collection and analysis. No petroleum compounds were detected in the trip blank, and analytical results for the duplicate samples were within 5 percent for BTEX, MTBE, and TPH.

3.0 SENSITIVE RECEPTOR SURVEY AND RISK ASSESSMENT

3.1 Sensitive Receptor Survey

MARIN conducted a survey to identify sensitive receptors in the vicinity of Maple Grove Farms of Vermont, Inc. that could potentially be impacted by residual soil and ground water contamination. The on-site building and all nearby buildings are served by a municipal water system. None of the on-site buildings have basements. The following sensitive receptors were identified in the vicinity of the site:

- Buried utilities (water and wastewater systems) are located along the southern edge of Portland Street upgradient of the former UST location.
- The Moose River, located approximately 120 feet to the south of the site, is the nearest downgradient surface-water body.

3.2 Risk Assessment

MARIN assessed the risks that the residual subsurface contamination poses to the receptors identified above. In general, human exposure to petroleum related contamination is possible through inhalation, ingestion, or direct contact while impacts to environmental receptors are due either to a direct release or contaminant migration through one receptor to another or along a preferential pathway.

The findings of our risk assessment indicate that the residual subsurface petroleum contamination at the site does not appear to pose a significant threat to any nearby sensitive receptors. Observations made during the UST closure and recent ground-water sample results from monitoring wells completed in and downgradient of the former UST suggest that residual contamination is limited to the immediate vicinity of the former UST.

- Although the Moose River likely represents the eventual surface discharge point of the ground water flowing beneath the site, the natural processes of dilution, dispersion and biodegradation — coupled with the relatively low levels of contamination noted in ground water at the release location — will likely prevent the discharge of significant concentrations of petroleum compounds to this river. No petroleum compounds were detected in the samples obtained from the wells downgradient of the former UST location.
- PID soil screening data from the UST excavation and monitoring-well borings suggest that the area of significant soil contamination is limited to the immediate vicinity of the former UST. The property is a commercial facility, which limits the potential for direct public exposure to contaminated soils.

4.0 CONCLUSIONS

Marin Environmental, Inc. has conducted an initial site investigation at Maple Grove Farms of Vermont, Inc. located on 167 Portland Street, St. Johnsbury, VT. The principal investigative findings are summarized as follows:

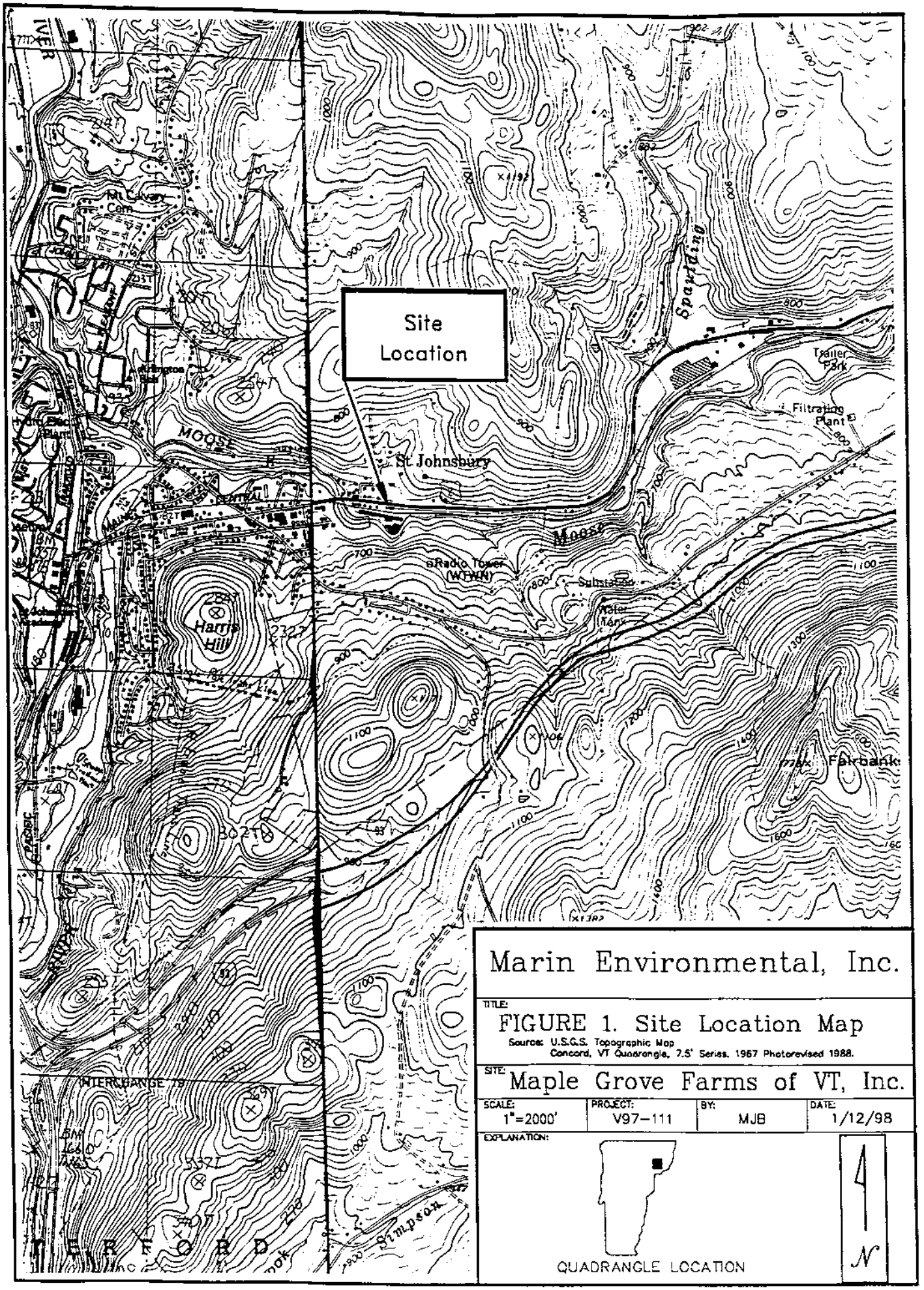
1. Petroleum released from apparent overfilling of the former underground storage tank (UST) system at the site appears to have resulted in a minor impact to ground water in the vicinity of the former UST system. Analytical results of ground-water samples collected from four on-site monitoring wells did not detect the presence of petroleum compounds above the Vermont Groundwater Enforcement Standards (VGESs).
2. Observations made during the UST closure and ground-water sample results from monitoring wells completed in and downgradient of the former UST locations suggest that residual contamination is limited to the immediate vicinity of the former UST.
3. The residual subsurface contamination at the site does not appear to pose a threat to any nearby sensitive receptors. No drinking-water supplies appear to be at risk from the residual contamination at the site. The on-site building and all nearby buildings are served by a municipal water system. None of the on-site buildings have basements. The nearby Moose River does not appear to be at risk at this time from residual contamination.
4. Surficial materials at the site consist mainly of medium to fine sand and gravel. On 2 December 1997, the water table was found to range from about 1.28 to 2.96 feet below ground surface, and exhibited a southerly trending gradient of about 6.25 percent.

5.0 RECOMMENDATIONS

On the basis of the results of this investigation, MARIN makes the following recommendations:

1. The four on-site monitoring wells should be resampled to confirm the December 1997 analytical results. The samples should be analyzed for petroleum-related compounds by EPA Method 8020 and for Polycyclic Aromatic Hydrocarbons by EPA Method 8100.

If the subsequent ground-water analytical results confirm the findings of the December 1997 analytical data (no exceedance of VGESs), MARIN recommends that the site be considered for "Site Management Activities Completed" (SMAC) status by the Vermont Department of Environmental Conservation (VT DEC)



Marin Environmental, Inc.

TITLE:
FIGURE 1. Site Location Map
Source: U.S.G.S. Topographic Map
Concord, VT Quadrangle, 7.5' Series. 1967 Photorevised 1988.

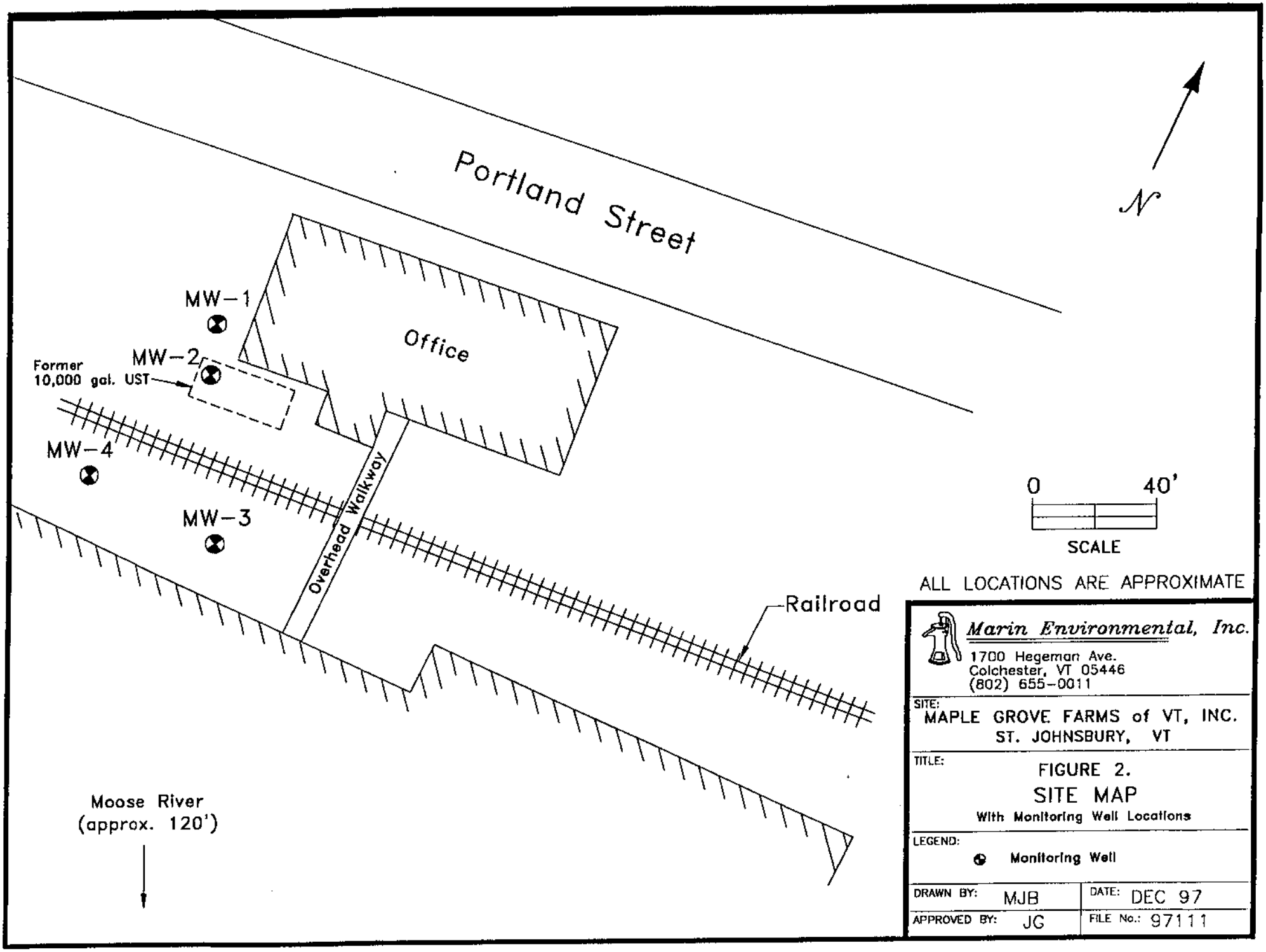
SITE: Maple Grove Farms of VT, Inc.

SCALE:	PROJECT:	BY:	DATE:
1"=2000'	V97-111	MJB	1/12/98

EXPLANATION:

QUADRANGLE LOCATION

N



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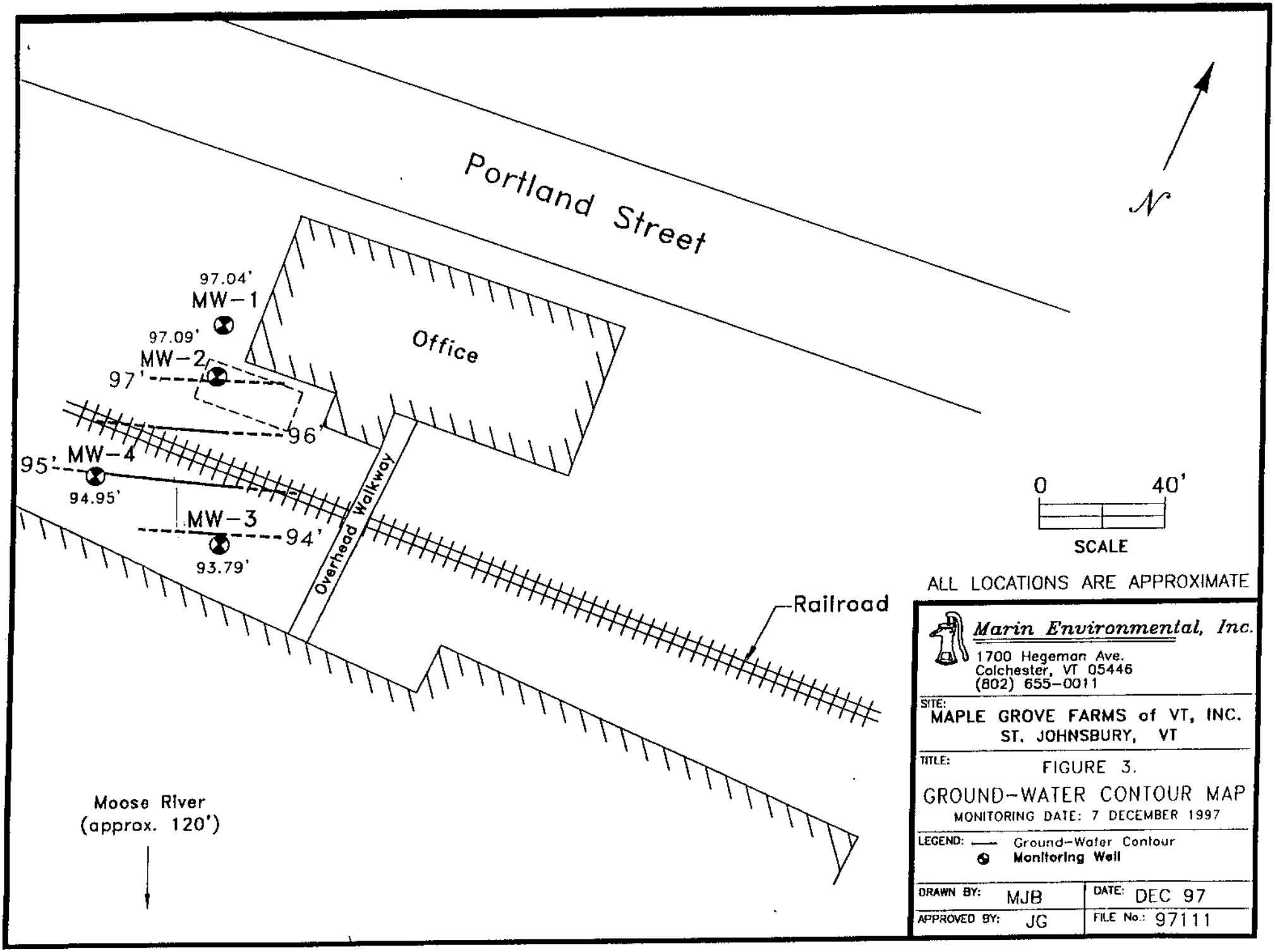
SITE:
MAPLE GROVE FARMS of VT, INC.
ST. JOHNSBURY, VT

TITLE:
FIGURE 2.
SITE MAP
With Monitoring Well Locations

LEGEND:
Monitoring Well

DRAWN BY: MJB	DATE: DEC 97
APPROVED BY: JG	FILE No.: 97111



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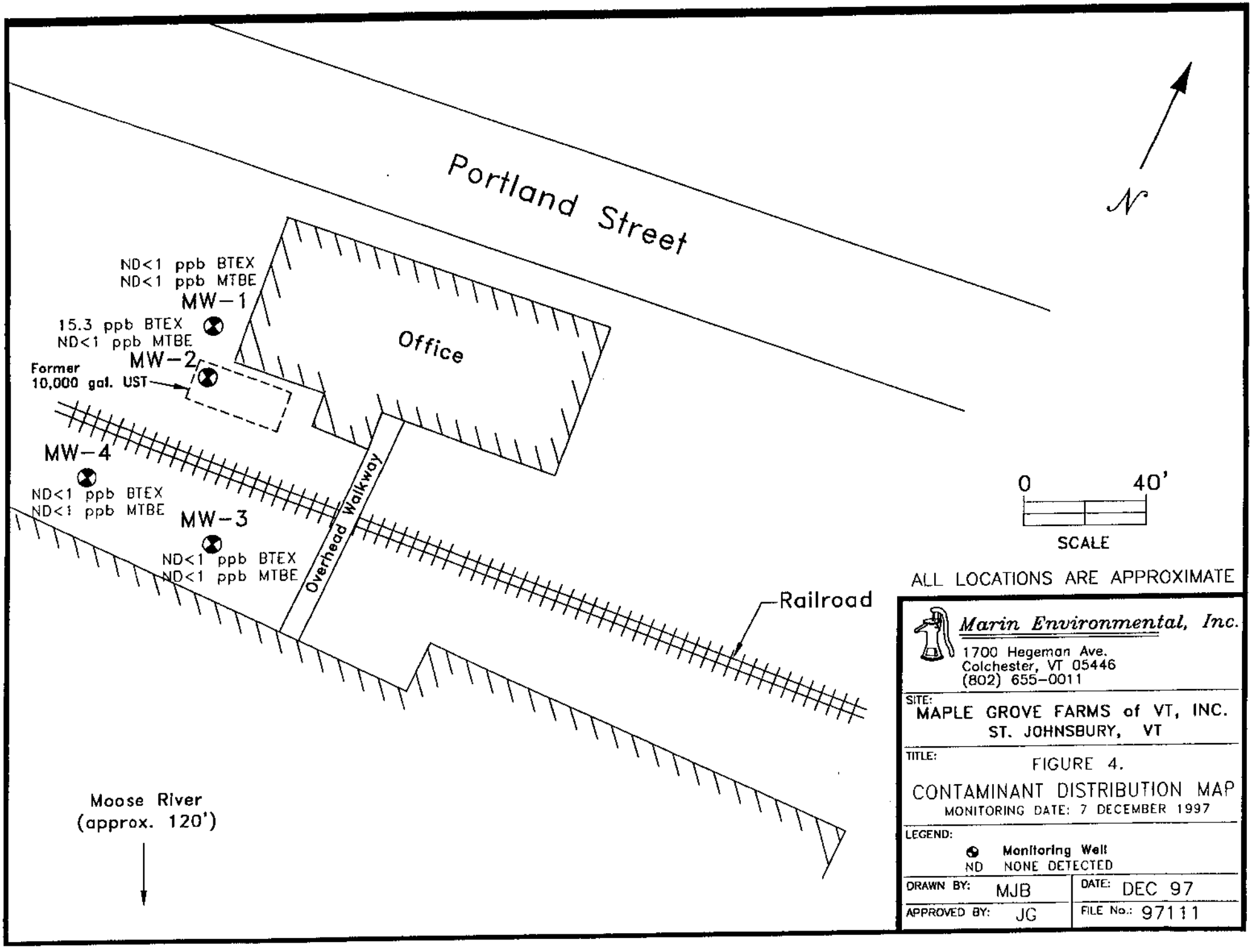
SITE:
MAPLE GROVE FARMS of VT, INC.
ST. JOHNSBURY, VT

TITLE:
FIGURE 3.
GROUND-WATER CONTOUR MAP
MONITORING DATE: 7 DECEMBER 1997

LEGEND: —— Ground-Water Contour
● Monitoring Well

DRAWN BY: MJB	DATE: DEC 97
APPROVED BY: JG	FILE No.: 97111



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SITE:
MAPLE GROVE FARMS of VT, INC.
ST. JOHNSBURY, VT

TITLE:
FIGURE 4.
CONTAMINANT DISTRIBUTION MAP
MONITORING DATE: 7 DECEMBER 1997

LEGEND:
Monitoring Well
ND NONE DETECTED

DRAWN BY: MJB	DATE: DEC 97
APPROVED BY: JG	FILE No.: 97111

APPENDIX A

Soil Boring and Well Construction Logs

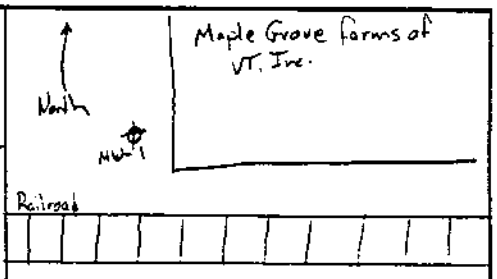
Marin Environmental, Inc.

SITE NAME: Maple Grove Farms of VT. Inc.
LOCATION: St. Johnsbury
JOB NO. 097-111
DATE: 11/18/97

BORING NO: MW-1
TOTAL DEPTH: 9'
DEPTH TO WATER: 5'

DRILLING METHOD: Vibratory
BORING DIAMETER: 2 3/4" OD

FIELD SUPERVISOR: Brent Deshaies
CONTRACTOR: Adams Engineering
DRILLERS: G. Adams



Boring/Well Location

Depth	SN	BLOW COUNTS PER 6" (0 6 12 18 / 6 12 18 24)	Rec.	SAMPLE DESCRIPTION/COMMENTS	WELL DETAIL	PID (ppm)
1'						
2'	S-1		2'	Pavement driveway and Gravel		0.0
3'						
4'						
5'	S-2		3'	brown medium to fine SAND some Gravel, (moist) ▽ 5' ATD		0.0
6'						
7'	S-3		2'	brown fine SAND, trace Gravel (wet)		0.0
8'						
9'	S-4		2'	grey fine SILT, (wet) BOB 9'		0.0
10'						
11'						
12'						
13'						

AND	33-50%
SOME	20-33%
LITTLE	10-20%
TRACE	0-10%

BLOW COUNT	
0 - 4	VERY LOSE
4 - 10	LOOSE
10 - 30	MEDIUM
30 - 50	DENSE
> 50	VERY DENSE

MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	1 1/2" PVC	5'
SLOT SIZE	0.010	
RISER	1 1/2" PVC	1'
GRADED SAND	9 - 1' BGS	
BENTONITE PELLETS		
BENTONITE GROUT	1 - .5' BGS	

Marin Environmental, Inc.

SITE NAME: Maple Grove Farms of VT, Inc.
LOCATION: St. Johnsbury
JOB NO. V97-111
DATE: 11/18/97

BORING NO: MW-2
TOTAL DEPTH: 12'
DEPTH TO WATER: 3.5'

North

Maple Grove Farms of VT, Inc.

MW-2

Railroad

Boring/Well Location

DRILLING METHOD: Vibratorn
BORING DIAMETER: 2 3/4" OD

FIELD SUPERVISOR: Brent Deshaies
CONTRACTOR: Adams Engineering
DRILLERS: G. Adams

Depth	SN	BLOW COUNTS PER 6" (0 / 6 / 12 / 18 / 24)	Rec.	SAMPLE DESCRIPTION/COMMENTS	WELL DETAIL	PID (ppm)
1'				brown medium SAND some Gravel (moist)		
2'	S-1		2'			0.0
3'	S-2			brown medium to fine SAND (wet) ▽ 3.5' ATD		1.4
4'	S-3					2.1
5'	S-4		3'			60.2
6'						
	S-5		5'	brown coarse to medium SAND (wet)		27.2
7'						
8'						
9'						
10'						
11'	S-6		1'			15.7
	S-7		1'	crushed stone (wet) BoB 12'		4.2
12'						
13'						

AND	33-50%
SOME	20-33%
LITTLE	10-20%
TRACE	0-10%

BLOW COUNT	
0 - 4	VERY LOSE
4 - 10	LOOSE
10 - 30	MEDIUM
30 - 50	DENSE
> 50	VERY DENSE

MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	1 1/2" PVC	10'
SLOT SIZE	0.010	
RISER	1 1/2" PVC	2'
GRADED SAND	12 - 1.5' BGS	
BENTONITE PELLETS		
BENTONITE GROUT	1.5 - 1' BGS	

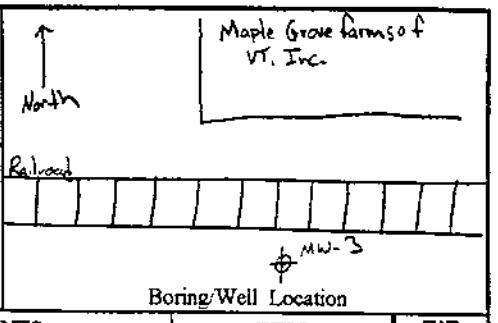
Marin Environmental, Inc.

SITE NAME: Maple Grove Farms of VT. Inc.
LOCATION: St. Johnsbury
JOB NO. 097-111
DATE: 11/18/97

BORING NO: MW-3
TOTAL DEPTH: 5.5'
DEPTH TO WATER: 3'

DRILLING METHOD: Auger
BORING DIAMETER: 2 3/4" OD

FIELD SUPERVISOR: Brent Deshaies
CONTRACTOR: Adams Engineering
DRILLERS: G. Adams



Boring/Well Location

Depth	SN	BLOW COUNTS PER 6" (0–6 / 6–12 / 12–18 / 18–24)	Rec.	SAMPLE DESCRIPTION/COMMENTS	WELL DETAIL	PID (ppm)
1'	S-1			brown medium SAND some Gravel		1.4
2'						
	S-2			brown medium SAND some Gravel, dark stained (wet)		2.1
3'				▼ 3' ATD		
	S-3			brown medium SAND. dark stained (wet)		2.1
4'						
	S-4			brown medium SAND. dark stained (wet)		0.0
5'				Refusal at 5.5' BoB 5.5'		
6'						

AND 33-50%
SOME 20-33%
LITTLE 10-20%
TRACE 0-10%

BLOW COUNT	
0 - 4	VERY LOSE
4 - 10	LOOSE
10 - 30	MEDIUM
30 - 50	DENSE
> 50	VERY DENSE

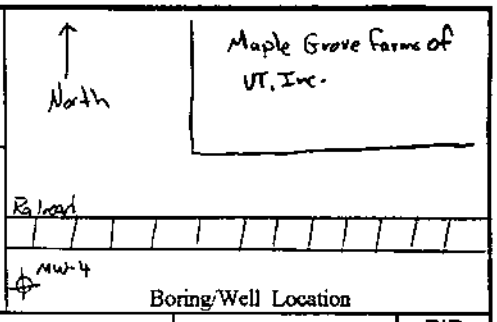
MATERIALS USED	SIZE/TYPE	QUANTITY
WELL SCREEN	1 1/2" PVC	3.5'
SLOT SIZE	0.010	
RISER	1 1/2" PVC	2'
GRADED SAND	5.5 - 1.5 BGS	
BENTONITE PELLETS		
BENTONITE GROUT	1.5 - 1 BGS	

Marin Environmental, Inc.

SITE NAME: Maple Grove Farms of VT, Inc.
LOCATION: St Johnsbury
JOB NO. V97-111
DATE: 11/18/97

BORING NO: MW-4
TOTAL DEPTH: 3'
DEPTH TO WATER: 1.5'

DRILLING METHOD: Auger
FIELD SUPERVISOR: Brent Deshaies
BORING DIAMETER: 2 3/4" OD
CONTRACTOR: Adams Engineering
DRILLERS: G. Adams



Depth	SN	BLOW COUNTS PER 6" (0 / 6 / 12 / 18 / 24)	Rec.	SAMPLE DESCRIPTION/COMMENTS	WELL DETAIL	PID (ppm)
1'	S-1			brown medium SAND some Gravel, dark Stained (moist)		2.8
				▽ 1.5' ATD		
2'						
	S-2			brown, medium SAND some Gravel, dark Stained (wet)		1.4
3'				Refusal at 3' BOB at 3'		
4'						
5'						
6'						

		BLOW COUNT		MATERIALS USED	SIZE/TYPE	QUANTITY
		0 - 4	VERY LOSE	WELL SCREEN	1½" PVC	2.5'
AND	33-50%	4 - 10	LOOSE	SLOT SIZE	0.010	
SOME	20-33%	10 - 30	MEDIUM	RISER	1½" PVC	.5'
LITTLE	10-20%	30 - 50	DENSE	GRADED SAND	3 - .5' BGS	
TRACE	0-10%	> 50	VERY DENSE	BENTONITE PELLETS		
				BENTONITE GROUT	.5 - .3 BGS	

APPENDIX B

Laboratory Report Forms

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Marin Environmental
PROJECT NAME: Maple Grove
REPORT DATE: December 15, 1997
DATE SAMPLED: December 2, 1997

PROJECT CODE: GWVT1593
REF.#: 114,342 - 114,347

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Marin Environmental
PROJECT NAME: Maple Grove
CLIENT PROJ. #: V97111

DATE RECEIVED: December 8, 1997
REPORT DATE: December 15, 1997
PROJECT CODE: GWVT1593

Ref. #:	114,342	114,343	114,344	114,345	114,346
Site:	MW-1	MW-3	MW-4	MW-2	Duplicate
Date Sampled:	12/2/97	12/2/97	12/2/97	12/2/97	12/2/97
Time Sampled:	13:00	13:15	13:30	13:50	NI
Sampler:	J.G.	J.G.	J.G.	J.G.	J.G.
Date Analyzed:	12/12/97	12/12/97	12/13/97	12/12/97	12/12/97
UIP Count:	0	0	1	>10	>10
Dil. Factor (%):	100	100	100	100	100
Surr % Rec. (%):	86	85	98	81	79
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	1.7	1.8
Toluene	<1	<1	<1	1.1	1.5
Xylenes	<1	<1	<1	12.5	17.3
MTBE	<1	<1	<1	<1	<1

Ref. #:	114,347
Site:	Trip Blank
Date Sampled:	12/2/97
Time Sampled:	7:00
Sampler:	J.G.
Date Analyzed:	12/12/97
UIP Count:	0
Dil. Factor (%):	100
Surr % Rec. (%):	86
Parameter	Conc. (ug/L)
Benzene	<1
Chlorobenzene	<1
1,2-Dichlorobenzene	<1
1,3-Dichlorobenzene	<1
1,4-Dichlorobenzene	<1
Ethylbenzene	<1
Toluene	<1
Xylenes	<1
MTBE	<1

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

GWVT 1597

ENDYNE, INC.
32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

V9711 114,342 — 114,352

CHAIN-OF-CUSTODY RECORD

24405

Project Name: Maple Grove Site Location:	Reporting Address: 1700 Hoffman Rd Colchester, VT	Billing Address:
Endyne Project Number: GWVT1593	Company: Marin. Env. Contact Name/Phone #: B. Doshais 655-0011	Sampler Name: J.G. Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 12/2/97	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
114,342	mw-1	H_2O	X		1300	2	40 ml G's		19	HCl	
	mw-1				1300				30		
114,343	mw-3				1350				19		
	mw-3				1350				30		
114,344	mw-4				1330				19		
	mw-4				1330				30		
114,345	mw-2				1350				19		
	mw-2				1350				30		
114,346	Duplicate				—				19		
	Duplicate				—				30		
114,347	Trip Blank				0700				19		

Relinquished by: Signature	Received by: Signature	Date/Time
Relinquished by: Signature	Received by: Signature John Sellin	Date/Time 12/8/97 3:15pm

New York State Project: Yes ____ No X

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX + MTBE	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify): TPH by Mod. 8100										

ENDYNE, INC.

Laboratory Services

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FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Marin Environmental
PROJECT NAME: Maple Grove/V97111
DATE REPORTED: December 15, 1997
DATE SAMPLED: December 2, 1997

PROJECT CODE: GWVT1594
REF. #: 114,348 - 114,352

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: December 15, 1997
CLIENT: Marin Environmental
PROJECT: Maple Grove/V97111
PROJECT CODE: GWVT1594
COLLECTED BY: Jay Gonyaw
DATE SAMPLED: December 2, 1997
DATE RECEIVED: December 8, 1997

Reference #	Sample ID	Concentration (mg/L)[1]
114,348	MW-1; 1300	ND[2]
114,349	MW-3; 1315	ND
114,350	MW-4; 1330	ND
114,351	MW-2; 1350	1.57
114,352	Duplicate; Not Indicated	1.49

Notes:

1 Values quantitated based on the response of #2 Fuel Oil. Method detection limit is 0.8 mg/L.
2 None Detected

ENDYNE, INC.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

V97111

CHAIN-OF-CUSTODY RECORD

24405

Project Name: Maple Grove Site Location:	Reporting Address: 700 Hegeman Ave Colchester, VT	Billing Address:
Endyne Project Number: GWVT1594	Company: Marin Env. Contact Name/Phone #: B. Doshais 655-6611	Sampler Name: Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 12/2/97	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
	mw-1	H_2O	X		1300	2	40 cc's		19	HCl	
114,348	mw-1				1300				30		
	mw-3				1350				19		
114,349	mw-3				1350				30		
	mw-4				1330				19		
114,350	mw-4				1330				30		
	mw-2				1350				19		
114,351	mw-2				1350				30		
	Duplicate				—				19		
114,352	Duplicate				—				30		
	Trip Blank				0700				19		

Relinquished by: Signature	Received by: Signature	Date/Time
Relinquished by: Signature	Received by: Signature John Reilly	Date/Time 12/8/97 3:15pm

New York State Project: Yes ____ No ✓

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX & MTBE	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify)										